



October 3, 2005

Mr. Jonathan Bishop
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013
VIA Fax (213) 576-6640

Re: Comments concerning the El Segundo Generating Station Proposal for Information Collection

Dear Mr. Bishop,

On behalf of Heal the Bay and Santa Monica Baykeeper, we submit the following comments on the El Segundo Generating Station (ESGS) Proposal for Information Collection ("PIC"), dated July 29, 2005. We have reviewed the PIC and find it inadequate to meet the requirements of Clean Water Act Section 316(b) and Porter-Cologne §13142.5. The PIC as drafted will not ensure the protection of the region's coastal waters. Information collected at this stage will form the critical basis for determining compliance with these federal and state laws, and any further policies adopted by the State Water Resources Control Board. Thus, as this is the first power plant PIC, we urge the Los Angeles Regional Water Quality Control Board ("Regional Board") to examine it closely and to ensure that it will result in a rigorous and thorough justification for the plant's impacts on coastal ecology. This is necessary to protect coastal waters in this region from the ongoing impacts of outdated once through cooling technology.

The PIC's two most glaring errors are its failure to consider cumulative impacts (especially given the high ecological value of the Bay, closely sited power plants, and ecological impacts from multiple uses in this region) and its failure to evaluate alternative cooling technologies. State and federal law give the Executive Officer of the Regional Board wide discretion to require these studies. Below, we have set forth several specific concerns regarding the proposed PIC. We appreciate the opportunity to offer these comments, and will also be submitting further comments to the Energy Commission as a condition of the ESGS repowering license.

1. Cumulative impacts are ignored

The PIC fails to include assessment of cumulative impacts associated with nearby plants utilizing once-through cooling technology. The facilities at Scattergood, Redondo Beach Generating Station, and ESGS are located in close proximity to one another. This raises some concern, as each is impacting the same coastal waters and ecosystems. The Santa Monica Bay is a sensitive

and stressed ecosystem. Based on circulation and volumetric relationships, the combined once-through cooling of its three power plants consumes 13% of the nearshore water in the Santa Monica Bay every 6 weeks.¹

In addition, the Bay is likely to suffer from three other categories of cumulative impacts:

- 1) Multiple effects from any given power plant (i.e. entrainment and thermal impacts dually affecting the same marine populations);
- 2) Effects from closely sited power plants (intakes from multiple power plants in a small area may have a greater impact than intakes from single facility); and
- 3) Effects of multiple uses within the coastal zone (i.e. combined impacts from fishing, sewage treatment plant effluent, stormwater runoff, and other anthropogenic impacts).

Clearly, all cumulative impacts must be examined to provide a complete assessment of the environmental impacts associated with CWIS at ESGS.²

Notably, the most recent impingement and entrainment study, conducted at Huntington Beach Generating Station, included an evaluation of cumulative impacts. Although there are concerns about the methodology used for this cumulative impact assessment, it plainly underscores and recognizes the importance of such an analysis. Future cumulative impact assessments, including ESGS, must be comprehensive and systematic to avoid the pitfalls encountered in Huntington Beach's study, including using a disproportionately large study area (the entire Southern California Bight), combining variable methods and frequencies of monitoring at each plant, and using incomplete entrainment data for each plant. The cumulative impact study at ESGS also should include assessment of a wide variety of species to account for both ecosystem functions and services. Additionally, the source water area should be realistic and representative of the potential impacts. Larvae found near Point Conception, while within the Southern California Bight, are not likely to be entrained by ESGS. Instead, defining a smaller source water area for closely grouped power plants will provide a more accurate cumulative impact analysis. Using Santa Monica Bay as the source water calculation for Scattergood, Redondo Beach Generating Station, and ESGS will provide more precise results than using the entire Southern California Bight.

We thus urge the Regional Board to require that ESGS pursue a cumulative impact analysis that takes all of the above considerations into account. A true assessment of impacts is not possible without a cumulative assessment in this case.

¹ CEC (2005) Staff Report: Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants, CEC-700-2005-013-AP-A, p37.

² CEC (2005) Staff Report: Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants, CEC-700-2005-013-AP-A, p26.

2. The list and descriptions of proposed technologies is not sufficient

The list of proposed technologies discussed in section five of the PIC is inadequate. Technologies included in this section are based upon the feasibility of implementation, biological effectiveness, and cost of implementation.³ Although the PIC includes a variety of alternative technologies, it fails to provide the economic and biological details of the feasibility analysis used to evaluate the technologies. Further, while the PIC provides descriptions of the technologies that ESGS considers inadequate or infeasible, including fine-mesh traveling screens, fish barrier nets, and behavioral barriers, it does not include any description of why closed-cycle options are not evaluated. It is unacceptable that dry cooling, closed cycle cooling, and hybrid cooling, as well as other environmentally-preferred options are not considered in the PIC. This is not adequate. ESGS must be required to provide a compelling and rigorous evaluation of all alternative technologies.

Similar studies conducted in New York for purposes of 316(b) require evaluation of all alternative technologies in detail including closed-cycle cooling. The evaluation must include a detailed description, engineering feasibility, assessment of mitigative benefits (reduction of impingement and entrainment), cost analysis, implementation timeline, and evaluation of adverse environmental impacts caused by the alternative.⁴ As ESGS's proposed evaluation of alternative technologies is far from adequate, the Regional Board must require ESGS to pursue a more thorough analysis.

3. The list of target species is inadequate

The proposed list of target species for entrainment and impingement analyses is severely limited, including only a few commercially important and abundant species. It is not sufficient to restrict the list of target species to common, fished organisms. For impingement analyses, the proposed list of species includes all fish, crabs, shrimp, squid, octopus, and spiny lobster; while entrainment analyses propose to monitor all fish life stages beyond egg, rock crab megalops (*Cancer spp*), market squid larvae (*Loligo opalescens*), and spiny lobster phyllosoma larvae (*Panulirus interruptus*). Although these species are economically important and provide essential ecosystem functions, the PIC fails to address impingement and entrainment of other ecologically important species, including sea cucumbers, sea urchins, sea stars, jellies, and other species common to the Santa Monica Bay. Trawl studies report that the spiny sand star (*Astropecten armatus*), sea jelly (*Scrippsia pacifica*), California sand star (*Astropecten verilli*), tuberculate pear crab (*Pyromaia tuberculata*), and blackspotted bay shrimp (*Crangon nigromaculata*) are commonly found in the area of the ESGS.⁵ Each of these species provides a unique ecosystem function, serving as predators, prey, detritivores, and nutrient recyclers. This substantiates the need for including a wider variety of organisms in impingement and entrainment studies.

³ Shaw Environmental & Infrastructure, Inc. (2005) Proposal for Information Collection Prepared for: El Segundo Power, LLC., p31.

⁴ NY Department of Environmental Conservation (January 24, 2005) Letter to Benjamin H. Grumbles, USEPA, pp4-5.

⁵ Tenera Environmental (2005) Impingement Mortality and Entrainment Characterization Study Sampling Plan, Prepared for: El Segundo Power, LLC., p4.

In addition, the list of target species in the proposed PIC represents only taxa that have high abundance in historical entrainment and impingement samples. When assessing CWIS impacts, it is critical to include less populous species. Neglecting species that have low absolute entrainment and impingement is a fundamental flaw in the proposed study as populations of these species may be smaller and yet experience a higher proportional impact. Small populations are less likely to exhibit resilience than large populations to the indiscriminate mortality caused by once-through cooling.

Sensitive species and those of high intrinsic value also should be included in the proposed entrainment and impingement study. Voluntary reporting illustrates that it is not unusual for marine mammals and sea turtles to suffer impingement. From 1988-2004, ESGS reported taking six California sea lions, one harbor seal, and one loggerhead sea turtle. A very similar plant sited less than one mile away from ESGS (Scattergood), reported taking 58 California sea lions, 2 harbor seals, 3 green sea turtles, and one loggerhead sea turtle in the same time frame.⁶ Due to the voluntary nature of the reporting, these numbers are not verified by the responsible agency and have high uncertainty. We also believe that the numbers may be underestimated. The take of protected species cannot be ignored. Take of marine mammals, sea turtles, tidewater gobies, bocaccio, canary and yelloweye rockfish, and abalone, as well as various other sensitive species must be specifically planned for in the PIC and documented by ESGS. The impingement and entrainment of any rare, threatened or endangered species should be recorded in detail, including the species, and if appropriate, size and weight of the organism.

In addition to an incomplete list of target species, the proposed entrainment study neglects fish eggs. The study considers the life stages of larval and adult fish, but fails to consider eggs citing difficulties with taxonomic identification.⁷ This justification is unacceptable. Classification of eggs to the species level should be a priority in the entrainment analysis. Fish eggs comprise a large portion of the entrained organisms and the entrainment analysis results will be deficient without species-specific egg information. There are many methods available to identify fish eggs, including relatively simple rapid photographic surveys. These and other methods base egg identification on unique characteristics including size, shape, color, character of the yolk, presence/absence of oil globules, and character of the developing embryo.⁸ In the few exceptions where species-specific classification cannot be derived, an egg count should be provided for the unidentified samples. However, it is imperative that species-specific fish egg identification be conducted in entrainment studies.

⁶ National Marine Fisheries Service Stranding Network (June 2005).

⁷ California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p7.

⁸ Murdoch et al. (1990) Rapid Shipboard Identification and Enumeration of Pelagic Marine Fish Eggs by a Simple Photographic Technique, *New Zealand Journal of Marine and Freshwater Research*, vol 24: p137-140.

4. The proposed methods for entrainment mortality sampling are insufficient and must be improved

Insufficient entrainment studies should no longer be acceptable at ESGS or any other once-through cooling facility. In the past, coastal power plants commonly downplayed the environmental impacts of entrainment. Recent studies at Moss Landing and Morro Bay have shown that cooling water intake systems (CWIS) previously thought to have no harmful biological impacts may actually kill 10-30% of fish larvae from individual species in the source water.⁹ These impacts can no longer be overlooked.

Thorough entrainment analyses have never been conducted at ESGS. As a surrogate study, ESGS used an entrainment analysis conducted at Ormond Beach Generating Station from 1978-1980, and scaled that data to ESGS' flow. This study is severely outdated and many of the natural populations, particularly fish, have changed since it was conducted.¹⁰ In addition, it is unknown whether the biological conditions at ESGS and Ormond Beach are comparable because the biological similarity of the locations of these two power plants was not analyzed in this study.

Similarly, while ESGS conducted a brief larval characterization survey in 2004 in preparation for future 316(b) field studies, this survey did not provide sufficient data for a larval intake characterization at ESGS. For instance, only eight surveys were conducted from May to June of 2004. This abbreviated sample period does not characterize seasonal differences in the abundance and diversity of species entrained at ESGS. More thorough data and analyses are needed for a precise characterization of entrainment at ESGS. Thus, this study serves only as a pilot analysis for future, more comprehensive, entrainment studies.

The proposed methods for entrainment mortality sampling are insufficient and are likely to generate imprecise results. The study design proposes short-period sampling (one 24-hour period each month). However, rare species occur in low densities, and are likely to be underrepresented in such a monthly sampling regime. The chance of catching a rare species is disproportionately low when sampling for only one 24-hour period each month. A more frequent sampling design would easily remedy this problem and is necessary here.

Further, elements within the ocean ecosystem (i.e. species distribution, currents, temperature, wind, nutrient concentrations) are highly variable. Monthly sampling will not account for this variability. The most recent impingement and entrainment study conducted by MBC and Tenera at Huntington Beach Generating Station performed weekly entrainment sampling. A weekly sampling regime provides regular testing, which should reduce the wide error margins associated

⁹ California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p4.

¹⁰ California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p4.

with monthly sampling. ESGS conducted weekly sampling from October 1978 to September 1980, demonstrating that such a sampling regime is feasible for ESGS.¹¹

5. Methods for impingement mortality sampling are insufficient

The proposed methods for impingement mortality sampling are inadequate and introduce wide room for error. Again, the study design proposes short-period sampling (one 24-hour period each month). As stated above, rare species occur in low densities, and are likely to be underrepresented in a monthly sampling regime. The chance of catching a rare species is disproportionately low when sampling for only one 24-hour period each month. We recommend a weekly sampling regime for impingement mortality to remedy this problem.

As previously stated, elements within the ocean ecosystem (i.e. species distribution, currents, temperature, wind, nutrient concentrations) are highly variable. Monthly sampling will not account for this variability. A weekly sampling regime provides regular testing, which will reduce the wide error margins associated with monthly sampling. ESGS has demonstrated in the past that such a sampling regime is feasible. Although ESGS cites infrequent impingement during weekly sampling as justification for relegating to monthly sampling, the cited study is over 30 years old.¹² We strongly urge the Regional Board to require weekly sampling for impingement mortality to ensure a rigorous and thorough analysis is conducted this time around.

Finally, ESGS has conducted monthly impingement sampling during normal plant operations and during heat treatments since 1998. The PIC proposes to use this data to calculate a baseline for future impingement sampling.¹³ The new Clean Water Act 316(b) regulations allow for the use of historical data to estimate a baseline, but require the PIC to show “the extent to which the data represent current conditions.”¹⁴ ESGS’s PIC fails to demonstrate how the historical impingement data is representative of current conditions. Historic impingement sampling at many coastal power plants is inadequate.¹⁵ To grant use of this historical data, the Regional Board should require ESGS to analyze and illustrate the relevance of this historical data to present conditions.

¹¹ Tenera Environmental (2005) Impingement Mortality and Entrainment Characterization Study Sampling Plan, Prepared for: El Segundo Power, LLC. p8.

¹² Tenera Environmental (2005) Impingement Mortality and Entrainment Characterization Study Sampling Plan, Prepared for: El Segundo Power, LLC. p8.

¹³ Shaw Environmental & Infrastructure, Inc. (2005) Proposal for Information Collection Prepared for: El Segundo Power, LLC. p49.

¹⁴ Clean Water Act 316(b), §125.95(b)(1)(ii).

¹⁵ California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California’s Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California’s Coastal Power Plants Using Once-Through Cooling, p4.

6. The proposed use of the site-specific alternative to BTA disregards comprehensive economic analysis

In the PIC, ESGS expresses a preference for using the site-specific alternative to BTA to meet the required performance standards under Section 316(b).¹⁶ If ESGS chooses to pursue the cost-cost or cost-benefit approach, the Regional Board must ensure that a rigorous and comprehensive cost-benefit analysis is conducted. ESGS should be required to demonstrate and document why they believe that costs of using BTA to achieve reductions in impingement and entrainment are too high in the context of power plant economics. Such an analysis must include direct and indirect non-market and market values for both industry and the environment. Any consumptive use valuation should examine all of the associated costs, including travel, bait, tackle, boat, gas, lodging, and others. Furthermore, non-market values cannot be ignored in the environmental economic analysis. Only a small fraction of species within the sea have direct market value, but almost all species present within close vicinity of intake pipes will be impacted, directly or indirectly, by once-through cooling. Valuation of these non-market species must be calculated in a meaningful manner.

7. The proposed methods to evaluate the environmental effects of impingement and entrainment are outdated

The PIC proposes to use a variety of methods to assess the effects of the cooling water intake system on impinged and entrained species, including adult equivalent loss (AEL), fecundity hindcasting (FH) and empirical transport modeling (ETM). Although this list may seem comprehensive, these methods are outdated. Several newer approaches are far more appropriate. Habitat production foregone (HPF) is the most current model used to assess the environmental impacts of CWIS and should be included among the impingement and entrainment analyses. The PIC defends the outdated models by stating, “The advantage of these demographic modeling approaches is that they translate losses into adult fishes that are familiar units to resource managers.”¹⁷ However, HPF also is consistent with these methods and translates the same complex demographic information into equally familiar units - the area of 100 percent habitat lost due to CWIS.¹⁸

In addition, HPF is useful for assessing cumulative impacts, as well as those on multiple species affected by CWIS. If one assumes that proportional mortalities and source waters for the monitored larvae are similar to those of larvae that are not assessed, then HPF is a more complete and realistic estimate of the adverse impacts caused by entrainment than AEL or FH.¹⁹ By using HPF, ESGS could also estimate the area of specific habitat lost, for example rocky reef or benthic sediments, by examining specific species recorded in the entrainment and impingement studies. At present, ESGS does not justify why it is not using HPF. The Regional Board should

¹⁶ Shaw Environmental & Infrastructure, Inc. (2005) Proposal for Information Collection Prepared for: El Segundo Power, LLC. p48.

¹⁷ Shaw Environmental & Infrastructure, Inc. (2005) Proposal for Information Collection Prepared for: El Segundo Power, LLC. p50.

¹⁸ Strange et al (2004). The Habitat-Based Replacement Cost Method for Assessing Monetary Damages for -Fish Resource Injuries. *Fisheries* 29(4), p17-24.

¹⁹ CEC (2005) Staff Report: Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants, CEC-700-2005-013-AP-A. p92.

require ESGS to use either the HPF method to quantify their environmental impacts, or to provide credible justification as to why they are not using this advanced methodology.

8. Elevated impingement during heat treatments needs further exploration

Historically, heat treatments account for 90% of impingement at ESGS.²⁰ The alarming rate of impingement during heat treatments thus warrants a separate impingement analysis. ESGS should be required to go beyond heat treatment monitoring and evaluate any technical or operational changes that can be made to reduce the high mortality during heat treatments. We also urge ESGS to include reasoning for the elevated impingement during heat treatments and explain the significance of the difference between normal operations and heat treatments in future studies.

Conclusion

Thank you for the opportunity to comment on the El Segundo Generating Station PIC. As described in detail above, we strongly urge the Regional Board to require a more thorough and accurate study, especially regarding cumulative impacts and alternative cooling technologies. We also encourage you to see that the methods, results, and quality control program receive adequate peer and independent review, ensuring the most unbiased analysis possible. As this is the first of many PICs to come before the Regional Board, it will form a vital first step in understanding the gross impacts of coastal power plants in the Los Angeles region. Please contact us if you have any questions regarding our comments.

Sincerely,

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cc: Blythe Ponek-Bacharowski, Regional Board (via email)
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²⁰ Tenera Environmental (2005) Impingement Mortality and Entrainment Characterization Study Sampling Plan, Prepared for: El Segundo Power, LLC. p8.